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REPUBLIC OF SOUTH AFRICA



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Certificate

PATENT OFFICE
REPUBLIEK VAN SUID-AFRIKA

DEPARTEMENT VAN
HANDEL EN NYWERHEID

DEPARTMENT OF TRADE
AND INDUSTRY

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REC'D 06 JUN 2003

WIPO PCT

the documents annexed hereto are true copies of:

Application forms P.1 and P.2, provisional specification and drawings
of South African Patent Application No. 2002/0140 as originally
filed in the Republic of South Africa on 08 January 2002 in the name
of RCM PLASTICS CC for an invention entitled : "A SCREENING
ELEMENT".

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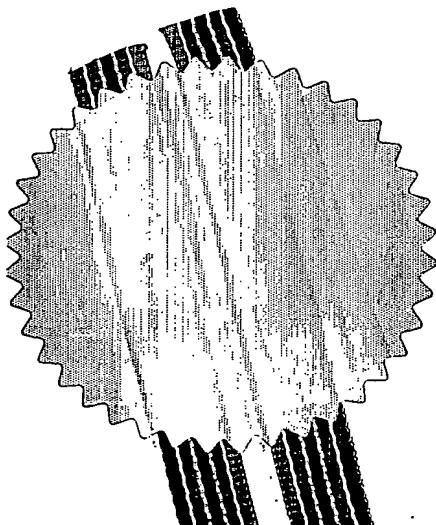
PRETORIA

in die Republiek van Suid-Afrika, hierdie
in the Republic of South Africa, this

15th

dag van
day of

April 2003



1
Registrar of Patents

REPUBLIC OF SOUTH AFRICA

PATENTS ACT, 1978

REGISTRAR OF PATENTS

Official Application No.		Lodging date: Provisional		Acceptance date:	
21	01	22	8 JANUARY 2002	47	
International classification		Lodging date: Complete		Granted date:	
51		23			

Full name(s) of applicant(s)/Patentee(s)

71 RCM PLASTICS CC

Applicant(s) substituted:

Date Registered:

71

Assignee(s):

Date Registered:

71

Full name(s) of inventor(s)

72 MAHL, Franz; LOUW, Charl, Wynand; REID-ROBERTSON, Johan, Theodore; MARIETTA, Angelo

Priority claimed

Country

Number

Date

Note:

33

NONE

31

NONE

32

NONE

Use International

33

31

32

Abbreviation for Country

33

31

32

Title of Invention:

54

A SCREENING ELEMENT

Address of applicant(s)/patentee(s)

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Address for Service:

74

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Patent of Addition to Patent No.

Date of any change:

61

Fresh Application based on:

Date of any change:

REPUBLIC OF SOUTH AFRICA
PATENTS ACT, 1978

APPLICATION FOR A PATENT AND ACKNOWLEDGEMENT OF
RECEIPT

(Section 30(1) - Regulation 22)

The grant of a patent is hereby requested by the undermentioned applicant on the basis of the present application filed in duplicate



OFFICIAL APPLICATION NO.

21 01 2002/0140

2002/0140

FULL NAME(S) OF APPLICANT(S)

71 RCM PLASTICS CC

ADDRESS(ES) OF APPLICANT(S)

Cnr. Main and Dam Roads, Anderbolt, Boksburg, 1459

TITLE OF INVENTION

54 A SCREENING ELEMENT

Priority is claimed as set out on the accompanying Form P2.

The earliest priority claimed is : NONE

This application is a patent of addition to Patent Application No. 21 01

This application is a fresh application in terms of section 37 and based on Application No. 21 01

THIS APPLICATION IS ACCOMPANIED BY:

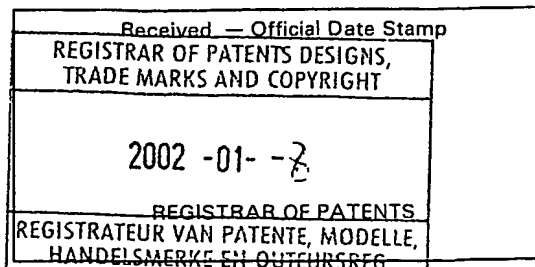
- | | | |
|-------------------------------------|----|--|
| <input checked="" type="checkbox"/> | 1 | A single copy of a provisional specification of11..... pages |
| <input type="checkbox"/> | 2 | Two copies of a complete specification of pages |
| <input checked="" type="checkbox"/> | 3 |2..... sheets of Informal Drawings |
| <input type="checkbox"/> | 4 | sheets of Formal Drawings |
| <input type="checkbox"/> | 5 | Publication particulars and abstract (Form P8 in duplicate) |
| <input type="checkbox"/> | 6 | A copy of Figure of drawings (if any) for the abstract |
| <input type="checkbox"/> | 7 | Assignment of Invention |
| <input type="checkbox"/> | 8 | Certified priority document(s) Number(s) |
| <input type="checkbox"/> | 9 | Translation of priority document(s) |
| <input type="checkbox"/> | 10 | An assignment of priority rights |
| <input type="checkbox"/> | 11 | A copy of the Form P2 and the specification of SA Patent Application |
| <input type="checkbox"/> | 12 | A declaration and power of attorney on Form P3 |
| <input type="checkbox"/> | 13 | Request for ante-dating on Form P4 |
| <input type="checkbox"/> | 14 | Request for classification on Form P9 |
| <input checked="" type="checkbox"/> | 15 | Form P2 in duplicate |

21 01

74 ADDRESS FOR SERVICE: McCALLUM, RADEMEYER & FREIMOND, Maclyn House, June Avenue, Bordeaux
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Dated this 8th day of JANUARY 2002

McCALLUM, RADEMEYER & FREIMOND
PATENT AGENTS FOR APPLICANT(S)



REPUBLIC OF SOUTH AFRICA
PATENTS ACT, 1978

PROVISIONAL SPECIFICATION

(Section 30(1) - Regulation 27)

OFFICIAL APPLICATION NO

21	01	2002/0140
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LODGING DATE

22	8 JANUARY 2002
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FULL NAME(S) OF APPLICANT(S)

71	RCM PLASTICS CC
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FULL NAME(S) OF INVENTOR(S)

72	MAHL, Franz; LOUW, Charl, Wynand; REID-ROBERTSON, Johan, Theodore; MARIETTA, Angelo
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TITLE OF INVENTION

54	A SCREENING ELEMENT
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BACKGROUND OF THE INVENTION

This invention relates to a screening element for use in the construction of modular screening decks used for the screening of particulate materials.

5 It is known to manufacture a screening element, from a synthetic plastics material, with a plurality of screening apertures which are in communication with one another. This allows the apertures to expand and this, at least to some extent, prevents the blocking of the individual apertures by the material being screened and the blinding of the screening element.

10 The applicant is aware of a number of screening elements employing the general principles stated above. These known screening elements all have a plurality of rib formations which extend across the screening element. These rib formations are arranged side by side on the screening element to define the apertures between them. The apertures so formed are in a staggered configuration and each aperture is bordered by at least four sections, two each from two different
15 rib formations. Each pair of sections is V-shaped and in combination forms a generally square aperture. In this manner the entire screening element is made up of apertures of the same square shape.

20 In order to screen the particulate materials effectively it may be beneficial to configure the rib formations in such a way that sections of the rib formations lie directly in the flow path of the particulate material. It is also important to control the rigidity and flexibility of the rib formations of the screening element.

The applicant is further aware that in certain screening elements that are manufactured from a synthetic plastics material the rib formations which define the apertures of the screening element are V-shaped in cross-section. In order to provide sufficient strength to the V-shaped elements substantial material is required.

SUMMARY OF THE INVENTION

The invention aims to alleviate at least some of the aforementioned problems.

The invention provides a screening element which includes a body with a frame, an upper screening surface and a lower discharge surface, a plurality of beam formations each of which extends at least partially across the frame, a plurality of first cross members extending from at least one beam formation in a first direction and a plurality of second cross members extending from the one beam formation in a second direction which is opposite to the first direction, each of the second cross members being directly opposite a respective first cross member.

The first and second cross members may each extend at a right angle from the one beam formation.

The frame may be reinforced and may included a reinforcing insert.

The apertures may be of a substantially square shape.

A plurality of apertures may be defined between at least two of the beam formations. Preferably the apertures are in communication with one another.

The one beam formation may be reinforced. Preferably the one beam formation is reinforced by way of a reinforcing insert.

- 5 In cross-section the one beam formation may include a tapered section and a support section. The tapered section may have an enlarged base facing towards the screening surface and a narrow neck facing towards the discharge surface. The support section may be attached to the tapered section and preferably the support section is attached to the neck. The support section may include a reinforcing insert.
- 10

The invention further extends to a screening element which includes a body with a frame, a plurality of first apertures of a first shape formed in the body and a plurality of second apertures of a second shape formed in the body.

The frame may be reinforced and may included a reinforcing insert.

- 15 The first shape may be hexagonal and the second shape may be octagonal.

Preferably the first apertures are in communication with one another and the second apertures are in communication with one another.

The screening element may include a plurality of beam formations defining the first and second apertures between them.

The beam formations may be reinforced and may in cross-section include a tapered section and a support section attached to the tapered section. Preferably the beam formations are reinforced by way of a reinforcing insert.

The invention further provides a screening element which includes a body with a frame, a plurality of beam formations extending across the frame, each beam formation having a screening formation with a first screening section which extends in a first direction, a second screening section attached to the first screening section which extends in a second direction which is different from the first direction, a third screening section attached to the second screening section which extends in a third direction which is opposite to the first direction and a fourth screening section attached to the third screening section which extends in the second direction, and a plurality of apertures defined between the beam formations.

The frame may be reinforced and may include a reinforcing insert.

The apertures may be in communication with one another. The apertures may be rectangular and are preferably square. The apertures may each be bordered on three of its four sides by the first, second and third screening sections.

The second direction may be at a right angle to the first direction.

Each beam formations may in cross-section include a tapered section and a support section attached to the tapered section, and may be reinforced. Preferably each beam formation is reinforced by way of a reinforcing insert.

5 The invention also extends to a screening element which includes a body with a frame which has a reinforcing insert and a plurality of beam formations extending across the frame.

At least one of the beam formations may in cross-section include a tapered section and a support section attached to the tapered section, and may be reinforced by way of a reinforcing insert.

10 The invention also provides a screening element which includes a body with a frame, an upper screening surface and a lower discharge surface, and a plurality of beam formations extending across the frame, at least one of the beam formations having in cross-section a tapered section and a support section attached to the tapered section.

15 Preferably the tapered section and the support section are integrally formed.

The tapered section may have a reducing taper from the screening surface towards the discharge surface and the support section may be between the tapered section and the discharge surface.

20 The beam formation may be reinforced and preferably includes a reinforcing insert.

Preferably the reinforcing insert is located in the support section.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is further described by way of examples with reference to the accompanying drawings in which:

5 Figure 1 is a plan view of a screening deck consisting of screening elements A, B, C and D according to the invention;

Figure 2 is an enlarged cross-sectional view on any of the lines 2-2 through beam formations of the screening elements of Figure 1; and

10 Figure 3 is an enlarged cross-sectional view on the line 3-3 of a frame of the screening elements of Figure 1.

DESCRIPTION OF PREFERRED EMBODIMENTS

Figure 1 illustrates a screening deck 10 which consists of a screening element A, a screening element B, a screening element D and a screening element C fitted together in a known modular fashion. Each of the screening elements A, B, C and D has a body 12 with a frame 14 and a plurality of beam formations 16 which extend across the frame 14. A plurality of screening apertures 18 which are in communication with one another are formed between at least two of the beams 16. The screening elements A to D are manufactured from an appropriate plastics material and are injection moulded in a known manner. Each of the screening elements A to D illustrates a different form of the invention.

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The screening element A has a first set of apertures 20 of a first shape defined between a first beam formation 22 and a second beam formation 24. A second set of apertures 26 of a second shape is defined between the second beam 24 and a third beam 28. The first and second shapes differ as each aperture 20 has a hexagonal shape and each aperture 26 has an octagonal shape. The first set of apertures 20 and the second set of apertures 26 are staggered relatively to one another.

By combining the different shapes of apertures the screening characteristics of the screening element A can be varied according to requirements.

The screening element B has a plurality of octagonal shaped apertures 18B defined between pairs of beams 16B. The various apertures 30 defined by the plurality of beams 16B are of the same size and octagonal shape.

The apertures 18C of the screening element C are of a square shape. Each of the beams 16C has a number of first cross members 32 which extend in a first direction as well as a number of second cross members 36 which extend in a second direction 38 which is opposite to the first direction 34. Each of the second cross members 36 extends from a beam 16C at a position which is directly opposite to the position of a respective first cross member 32. The intersection of each of the first cross members 32, second cross members 36 and the beam 16C is thus cross-shaped. Each of the first and second cross members 32, 36 extends at a right angle to the beam 16C. Each of the apertures

18C is in communication with an adjacent aperture 18C by way of passages 40C between each set of beams 16C.

Each of the beams 16D of the screening element D has a number of screening formations 42. Each screening formation 42 consists of a first screening section 44 which extends in the first direction 34, a second screening section 46 which is attached to the first screening section 44 and extends in a third direction 48 which is different from and at a right angle to the first direction 34, a third screening section 50 which is attached to the second screening section 46 and extends in the second direction 38 and a fourth screening section 52 which is attached to the third screening section 50 and extends in the third direction 48.

As each of the beams 16D is formed from a number of the screening formations 42, alternating, opposite facing, cup-shaped troughs 54 are formed on each beam 16D. Rectangular apertures 18D are thus formed between adjacent beams 16D and each aperture 18D is bordered on three of its four sides by the first, second and third screening sections 44, 46, 50. Adjacent apertures 18D are in communication with one another through passages 40D defined between the adjacent beams 16D.

The apertures 18C and 18D are not in a staggered configuration as the apertures 18A and 18B but are situated directly next to one another.

The beams 18C and the cross members 32, 36 and the beams 18D and the screening sections 44, 46, 50, 52 respectively together form barriers which, in

use, lie directly across the flow path of a particulate material (not shown) being screened on the screening elements C, D.

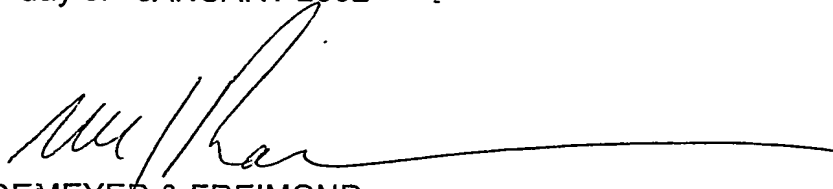
As is shown in Figure 2 the screening deck 10 has an upper screening surface 70 and a lower discharge surface 72. In cross-section each of the beams 18 is of an integrally formed two-part construction. Each beam 18 has a first tapered section 74 and a second rectangular support section 76 attached to the tapered section 74. The tapered section 74 has a base 80 at the screening surface 70 and a neck 82 facing towards the discharge surface 72. The tapered section 74 has a reducing taper from the base 80 at the screening surface 70 towards the neck 82 facing the discharge surface 72. The support section 76 is attached to the neck 82 and is located between the neck 82 and the discharge surface 72. The support section 76 is reinforced by a reinforcing insert 78. The reinforcing insert 78 is of any appropriate material.

The support section 76 supports the tapered section 74 and the two part construction of the beams 16 allows for a reduction of the width W of the base 80 without compromising the screening ability and strength of the screening elements A to D. This can result in a reduction of material use.

Figure 3 shows a cross-section of one of the frames 14. The frame 14 is reinforced by a reinforcing insert 84 similar to the reinforcing insert 78 to provide stability and strength to the frame 14.

It is to be understood that the different screening elements A to D are used for different applications and that the reinforcing insert 78 can be omitted in applications where the support section 76 provides sufficient strength and support to the beams 16.

5 DATED this 8th day of JANUARY 2002



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Patent Agents for the Applicant

2002/0140

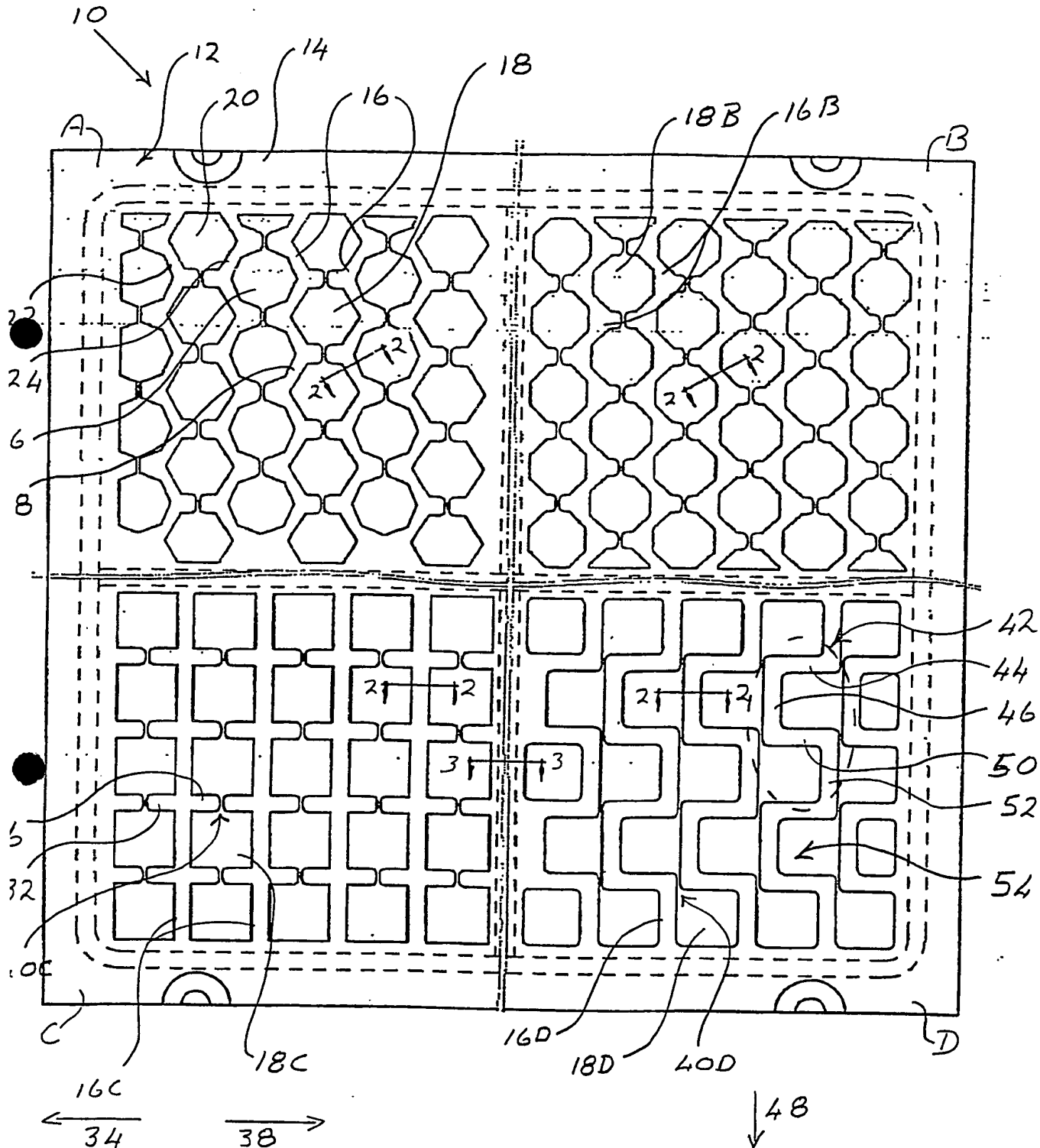


FIGURE 1

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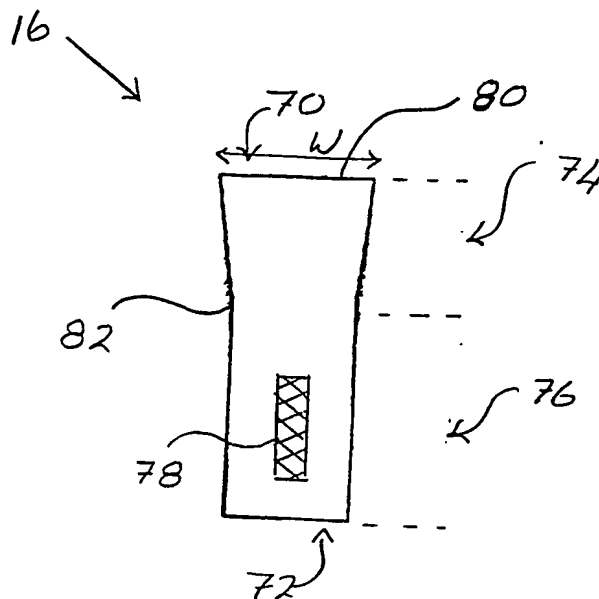


FIGURE 2

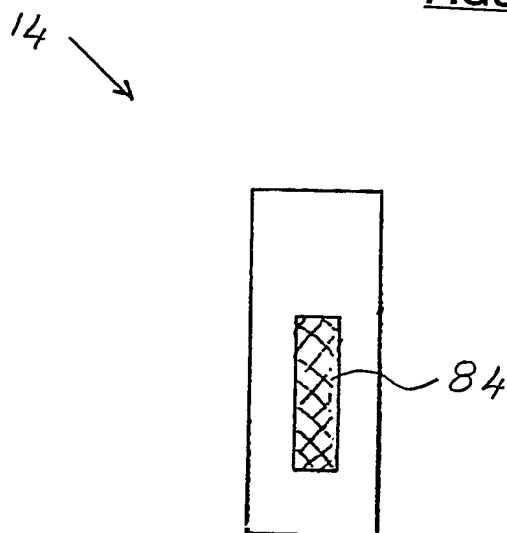


FIGURE 3